What is Claimed:

1. A mega-boule for use in fabricating microchannel plates (MCPs), the mega-boule comprising

a cross-sectional surface including an island section, an inner perimeter section and an outer perimeter section, each section occupying a distinct portion of the cross-sectional surface,

wherein the island section is formed of a first plurality of optical fibers, transversely oriented to the cross-sectional surface, each optical fiber including a cladding formed of non-etchable material and a core formed of etchable material,

the inner perimeter section is formed of non-etchable material and is disposed to surround the island section, and

the outer perimeter section is formed of a second plurality of optical fibers, transversely oriented to the cross-sectional surface, each optical fiber including a cladding formed of non-etchable material and a core formed of etchable material, and the outer perimeter section is disposed to surround the island section and the inner perimeter section.

2. The mega-boule of claim 1 further including

at least another section occupying a distinct portion of the cross-sectional surface,

wherein the other section is formed of non-etchable material, and is separated from the inner perimeter section by the outer perimeter section.

3. The mega-boule of claim 2 wherein

the first and second plurality of optical fibers and the non-etchable material of the inner perimeter section and the other section form a fused monolithic stack, when heated and pressed.

4. The mega-boule of claim 1 wherein

the echable material and the non-etchable material are glass, and

the non-etchable material includes a higher lead content than the etchable material.

5. The mega-boule of claim 1 wherein

the non-etchable material of the inner perimeter section includes a plurality of support rods transversely oriented to the cross-sectional surface.

6. The mega-boule of claim 1 wherein

the non-etchable material of the inner perimeter section includes a plurality of support rods transversely oriented to the cross-sectional surface, and

the first plurality of optical fibers of the island section and the plurality of support rods of the inner perimeter section are configured for use as an MCP.

7. The mega-boule of claim 1 wherein

an optical fiber of the first plurality of optical fibers of the island section and an optical fiber of the second plurality of optical fibers of the outer perimeter section are substantially similar in cross-section.

8. The mega-boule of claim 1 wherein

the first plurality of optical fibers of the island section form transverse microchannels for an MCP, when the island section is etched, and

the second plurality of optical fibers of the outer perimeter section form perforated cleave planes, when the outer perimeter section is etched.

9. The mega-boule of claim 1 wherein

the island section, the inner perimeter section and the outer perimeter section have one of a rectangular configuration and a circular configuration.

10. The mega-boule of claim 1 wherein

the outer perimeter section and the island section form an MCP, and

the outer perimeter section includes a sufficient cross-sectional width for forming perforated cleave planes to break away the MCP from the mega-boule, and

for preventing the MCP die accidentally breaking away during fabrication of the MCP.

11. A method of fabricating microchannel plates (MCPs) comprising the steps of:

(a) providing bundles of optical fibers, wherein each optical fiber includes a cladding formed of non-etchable material and a core formed of etchable material;

(b) stacking a plurality of the bundles to form at least one island section, defining a mini-boule;

(c) stacking non-etchable material to surround the mini-boule and form an inner section that surrounds the mini-boule;

(d) stacking etchable material to surround the inner section and form an outer section that surrounds the inner section;

(e) stacking additional non-etchable material to surround the outer section and form an exterior section; and

(f) fusing the mini-boule, the inner section, the outer section and the exterior section to form a mega-boule for use in fabricating the MCPs.

12. The method of claim 11 further including the steps of:

(g) dicing the mega-boule to form multiple mega-boule wafers, each mega-boule wafer defining a batch die; and

(h) activating, and metallizing a mega-boule wafer for forming the MCPs.

13. The method of claim 12 wherein step (h) includes

etching an outer section of the mega-boule wafer to form perforated cleave planes, and breaking the perforated cleave planes to extract an MCP from the mega-boule wafer.

14. The method of claim 12 wherein step (h) includes

etching the mega-boule wafer to form microchannels in the cores of the optical fibers,

etching the outer sections of the mega-boule wafer to form perforated cleave planes, and

breaking the perforated cleave planes to extract the MCPs from the mega-boule wafer.

15. The method of claim 14 wherein etching the mega-boule wafer to form the microchannels is performed before etching the outer sections of the mega-boule wafer to form the perforated cleave planes.

16. A method of fabricating microchannel plates (MCPs) comprising the steps of:

(a) stacking etchable and non-etchable optical materials to form a plurality of mini-boules, the mini-boules separated from each other and forming separate islands along a cross-sectional surface;

(b) stacking non-etchable optical material to surround the plurality of mini-boules and form a plurality of inner perimeter sections along the cross-sectional surface, each surrounding a corresponding mini-boule;

(c) stacking etchable and non-etchable optical materials to surround the plurality of inner perimeter sections and form a plurality of outer perimeter sections along the cross-sectional surface, each surrounding a corresponding inner perimeter section; and

(d) fusing the stacked etchable and non-etchable optical materials of steps (a)-(c) to form a mega-boule for use in fabricating the MCPs.

17. The method of claim 16 wherein step (c) includes

stacking additional non-etchable material to surround the plurality of outer perimeter sections and form an exterior section along the cross-sectional surface.

18. The method of claim 16 wherein step (a) includes stacking optical fibers, each optical fiber having a cladding formed of non-etchable material and a core formed of etchable material.

19. The method of claim 16 wherein step (c) includes stacking optical fibers, each optical fiber having a cladding formed of non-etchable material and a core formed of etchable material.

20. The method of claim 19 including the step of:

(e) etching at least one outer perimeter section of the plurality of outer perimeter sections to form perforated cleave planes in the one outer perimeter section for breaking away an island and an inner perimeter section disposed within the one outer perimeter section.